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ABSTRACT

There has been a long standing concern with the preparation and training of group counselors. This study attempted to determine the efficacy of a computer-based, prescriptive method for teaching group leadership decision rules to graduate level counselor trainees. In the first phase of the study, the computer-based, prescriptive curriculum was developed, as well as control condition. The leadership decision rules were developed by interviewing group counselors, (N=10) who each had at least 5 or more years of group experience. In the second phase of the study, the curriculum was evaluated using a randomized comparative experiment with graduate student subjects (N=20). Based on results of the evaluation, the computer-based, prescriptive curriculum was effective in teaching the content it was designed to teach. Results concerning performance were not as clear cut as had been hoped. Reasons for this include that the decision rules and actions comprising the prescriptive curriculum were both detailed and extensive and therefore it was probably unrealistic to expect trainees to absorb and integrate the quantity of detailed information involved in only 6 hours spread across 3 weeks. Also, the group interaction was assessed in the fifth week of the quarter which was too early. (ABL)

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A Computer-Based, Prescriptive Approach for Teaching Expertise to Group Counselors

by

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INTRODUCTION

There has been a long standing concern with the preparation and training of group counselors (Smith, 1976). The Association for Counselor Education and Supervision, The American College Personnel Association, and The American Group Psychotherapy Association have all proposed guidelines for the training of group counselors (ACES, 1974; ACPA, 1975; and AGPA, 1982). These guidelines, however, along with major classification systems for group counseling skills, only broadly define skill areas in which the counselor should become proficient (Lieberman, Yalom, & Miles, 1973; Ohlsen, 1977).

There are a variety of proposed models for developing and organizing instructional units to educate group counselors (Ballou, Reisman, & Weigand, 1978; Jacobs, Brown, and Randolph, 1974; Bascue, 1978; Ritter, 1982). Krumboltz and Potter (1973) have come closest to offering a proposal of specific group leadership skills which both defines and illustrates behavioral skills, although they fail to specify the conditions under which the leadership skills should be used.

Very few empirical studies have been completed that analyze the effectiveness of training procedures for group leaders. However, at least some support exists for the following training procedures employed with group counselors: theoretical teaching (Yalom, 1975; Lechowicz & Gazda, 1975); experiential learning, with trainees placed as participants in counseling groups (Walker, 1977; Buczynski, 1978; Ritter, 1982); role playing exercises (Charonko, 1979); reinforcement (Pattinson, Rardin, &

Lindberg, 1977); and direct supervision of the trainees' own groups (Biasco & Redfering, 1976).

There are three main techniques for skill training: trial and error with feedback; modeling; and prescriptive instruction. It is prescriptive instruction that is the focus of the research reported in this paper. One benefit of a prescriptive approach is its efficiency. Ever since the work of Landa (1974), prescription has held the promise of reducing the instructional resources required to achieve a given level of performance. A second appeal is the consistency of prescription with current interest in the counselor's cognitive skills.

Hillerbrand (1989), in summarizing the cognitive skill differences between expert and novice counselors, raised the question for future research, "Does the overt programmed instruction of trainees about the skills themselves affect skill acquisition?" In Johnson and Heppner's (1989) opinion, more complete knowledge of how counselors process information will affect cognitive skills training and may demystify "counselor intuition."

Another way in which prescription connects to counselor cognition is through research on counselor "self talk" (Robinson, Kurpius, & Froehle, 1979; Kurpius, Benjamin, & Morran, 1985). If cognitive skills are taught directly, they are "in awareness" and can be used by counselors to actively monitor their own behavior and provide their own feedback.

It may be difficult to achieve a similar level of internal dialogue if skills are acquired through modeling. When the

student can only observe the external process/behavior of the group leader, the therapist's decision rules governing which specific events trigger which interventions are not available to the student. Most counselors have a difficult time articulating their decision rules, since they were learned primarily from observation and trial and error (Charonko, 1979).

Little has been done in the area of prescriptive instruction in counselor education. (Although in other domains, physics for example, there have been a number of successful studies in which students were taught specific decision rules for solving simple and complex problems [Champagne, Klopfer, & Gunstone, 1982; Heller & Reif, 1984; Reif & Heller, 1981].) Some research has been done on individual counselors. For example, students have been taught to successfully respond to a computer-simulated client (Shaffer & Hummel, 1979) and a role-played client (Shaffer & Hasegawa, 1984) using an empathy algorithm. Quartaro and Rennie (1983) found that when brief, specific instructions were given to novice counselors, these counselors became more client-centered in their response style and performed at a level usually associated with more extensive training. With respect to training group leaders, however, there is an absence of research which assesses the effectiveness of prescribing situation-specific leadership interventions for the group counseling trainee.

As mentioned above, one benefit of a prescriptive approach is its efficiency. Another way to reduce instructional resources is to have certain instructional tasks carried out by computer.

Computers have been used in counselor education, for example Alpert (1986), but in 1990, the research literature on training group counselors is much the same as Phillips found it in 1983. There do not seem to be examples of computer assisted instruction for group counselors.

The purpose of the research we are reporting was to determine the efficacy of a computer-based, prescriptive method for teaching group leadership decision rules to graduate level counselor trainees. Outcome was measured by both knowledge and performance variables. This research had two major phases. In phase one, the computer-based, prescriptive curriculum was developed, as well as a control condition. In phase two, the curriculum was evaluated using a randomized comparative experiment. In this latter phase, two separate questions were addressed: 1) Is there a difference between the group that received a prescriptive method of instruction and the control group in its ability to correctly identify leadership interventions as depicted in videotaped excerpts from a simulated counseling group; and 2) Is there a difference between these two groups in their leadership performance as measured by Hill Interaction Matrix (Hill, 1965) ratings of the trainees' own counseling groups?

METHODS

Curriculum Development

The first step was the development of the prescriptive curriculum for teaching the students leadership interventions and

corresponding decision rules for when to use specific interventions. The leadership decision rules were developed by interviewing experienced group counselors. Ten licensed psychologists, each with five or more years of group experience, were asked to participate. They were selected on the basis of their reputations as effective counselors and, of course, their willingness to participate. They were interviewed individually, each interview lasting from one to two-and-a-half hours. Each counselor was interviewed at least twice, with some being interviewed as many as four times. Initially, they specified their typical responses to a series of problematic group counseling situations compiled by Dyer and Vriend (1973). These responses were synthesized and then revised based on feedback from the original interviewees and five additional group counselors. At this point, explicit examples were added to further illustrate the leader's intervention. As a final step in decision rule development, seven of the original interviewees reviewed the rules and final corrections were made. These corrected decision rules constituted the basis for the prescriptive curriculum which was the experimental condition. (Examples of decision rules and action prescriptions are included in the Appendix. For more information see Johnson (1984).)

Lesson plans for the computer-based prescriptive curriculum were developed in consultation with two university professors experienced in teaching group counseling. Tnese plans covered three two-hour class periods. Computer-based tutorials were developed using Bell and Howell's GENIS I authoring system for

the Apple II computer and utilized text presentation, question and answer, review, and interactive "role play" situations.

The curriculum for the control group was adapted from relevant chapters of a group counseling text (Yalom, 1975). The format and computer programming of the lesson plans were similar to those used in the experimental condition.

Both the prescriptive and the control condition tutorials were test run with volunteers from a group techniques class for students not majoring in counseling. Based on their feedback, final revisions were made.

Experimental Procedure

The second phase of this research was an experiment designed to evaluate the relative effectiveness of the curricula.

Subjects: The sample consisted of twenty graduate students (15 females and 5 males) majoring in counseling psychology who enrolled in a group counseling practicum at the University of Minnesota. Some students had previous experience leading groups, but almost none had experience with computer assisted instruction or other computer applications.

Design: As part of the practicum, the students were required to attend lab instruction and lead their own counseling groups. Within the constraint that an equal number of subjects was required for each lab session, students self-selected to participate in lab on Monday or Wednesday. The labs met at the same time of day, in the same room, for four weekly sessions. Within each lab day, students were randomly assigned to receive either the prescriptive or control curriculum. This resulted in

a 2 x 2 generalized randomized block design (Kirk, 1982) in which the two lab days served as the blocking variable and curricula defined the experimental conditions.

The Knowledge Test: The first outcome variable was a written exam designed to assess the students' knowledge of appropriate leadership interventions, referred to as the Knowledge Test. The Knowledge Test occurred during the fourth and final lab meeting. The students were shown 15 videotaped excerpts from a simulated counseling group and were asked to write their assessment of the situation as well as a description of the action they would take as the group's leader. Scoring criteria for the written responses were developed and given to an evaluator, a psychologist with considerable group experience. This evaluator scored the Knowledge Test and was blind with respect to the subjects' treatment.

The Hill Interaction Matrix (HIM): The second outcome variable was a measure of performance. HIM ratings (Hill,1965) of audiotapes of the students' counseling groups were used to determine to what extent the treatments affected the quality of subjects' interaction in their counseling groups. All students submitted an audiotape of the counseling group session which occurred during the fifth week of the quarter (the week after the videotaped lab evaluation). The tapes were rated by Dr. Priscilla Hill, a noted HIM expert who was blind to the subjects' treatment assignment. Test-retest reliability for well trained HIM raters has been found to range from .90 to .99 (Gutzmer & Hill, 1973). The HIM crosses four "work-style" categories

(conventional, assertive, speculative, and confrontive) with four "content-style" categories (topic, group, personal, and relational), which results in a matrix with 16 cells (See Figure 1). Each cell was rated separately for the leader and the members, and the ratings were reported as a percentage of total verbal interaction. Taking care to avoid linear dependencies, cell ratings were combined in the following fashion: for the leader, Leader-Here/Now (cells 2,4,6,8,10,12,14 & 16), Leader-Relationship/Work (cells 14 & 16), and Leader-Quadrant IV (cells 13-16); and for members, Member-Here/Now and Member-Quadrant IV, defined in the same way as the corresponding leader combinations, and Member-Personal (cells 9-16).

Procedures: After the students selected their lab day and had been randomly assigned to treatments, a letter was sent confirming their lab assignment and requesting their attendance at an organizational meeting. At this meeting, the computerized format of the lab was explained, and the students were told that two curricula were being evaluated. All lab sessions were held in the same classroom, which contained 12 Apple II computers. When students arrived at a lab session, they were randomly assigned to a microcomputer and given a folder containing an instruction sheet and diskette appropriate for their treatment condition. This format was repeated for the three training sessions. A lab instructor, a doctoral student in curriculum and instruction experienced with microcomputers, was always present and prepared to handle technical emergencies.

This instructor was told not to answer questions about the content of lessons. During the fourth lab session, the Knowledge Test was administered. During the fifth week of the quarter, the students turned in an audio tape of a counseling session for a group they were leading currently.

RESULTS

Knowledge Test

A 2 x 2 analysis of variance for a completely crossed design was carried out for the Knowledge Test. The interaction between training condition and lab day was not significant, $F(1, 16) = .000$, $p = .999$, and neither was the main effect for lab day (blocks), $F(1,16) = .004$, $p = .949$. However, the main effect for treatment condition (prescriptive curriculum versus control) was significant, $F(1,16) = 24.24$, $p = .001$. Tables 1 and 2 present the descriptive statistics and the analysis of variance, respectively. From these tables, it can be determined that the main effect mean for the prescriptive curriculum is 39.5, while for the control condition it is 24.3. Subtracting these main effect means and dividing the difference by the square root of mean square error results in a very large effect size (ES) of 2.20.

Hill Interaction Matrix (HIM)

A 2 x 2 multivariate analysis of variance for a completely crossed design was carried out for the HIM. Neither the interaction between training condition and lab day nor the main effect for lab day (blocks) was significant, $F(6,11) = .1.34$, $p =$

.317 and $F(6,11) = 1.48$, $p = .271$, respectively. As with the Knowledge Test, the main effect for treatment condition (prescriptive curriculum versus control) was significant, $F(6,11) = 4.33$, $p = .017$. Tables 3 and 4 present the descriptive statistics, and Table 5 presents the univariate analyses of variance for treatments. None of the univariate analyses for the treatment main effect reached signficance.

Leader-Here/Now approaches significance with $p = .067$. The effect size for this variable, ES = .88, indicates a substantial treatment effect in the sample, but given the rather modest number of subjects used in this experiment, it does not reach statistical significance.

With the sample size used, only weighted sums of the variables result in generalizable group differences. On the weighted sum which maximally discriminates between the treatment conditions, i.e., the canonical variate, the multivariate effect size is ES = 2.75, which is a great deal larger than the .88 for the largest univariate effect. Unfortunately, this multivariate effect is not easily explained as a simple combination of univariate effects. Using the Roy and Bose (1953) simultaneous confidence interval procedure and using the univariate effect sizes as weights, one discovers two things. First, the weighted sum based on the univariate effect sizes is not significant, and second, the effect size associated with this combination is ES = 1.55, not nearly as large as the 2.75 for the optimal combination. Therefore, something in the intercorrelations of the variables must explain the statistical significance.

Inspecting the canonical variate weights, one finds that the largest standardized weight is assigned to Member-Quadrant IV, the variable with the smallest univariate effect size, ES = .16. An inspection of the within-groups correlation matrix reveals the reason for this: Member-Quadrant IV is acting as a powerful error suppressor.

A variable which effectively suppresses error is a variable that has the attributes of a good covariate in analysis of covariance. These attributes are the following: 1) the within-groups correlation between covariate and outcome variable should be high in absolute value; and 2) either there should be very little difference in the covariate means or the sign of correlation between the covariate and outcome variable means should be the opposite of the sign of the within-groups correlation between these variables.

For both Leader-Quadrant IV and Member-Here/Now, Member-Quadrant IV is an effective error suppressor. Assigning weights of -.67, .80, and 1.0, to Leader-Quadrant IV, Member-Here/Now, and Member-Quadrant IV, respectively, (which seemed reasonable given the relationships between these variables) results in ES = 2.22, over 80% of the ES = 2.75 for the optimal weighted sum (canonical variate) which led to the significant treatment main effect.

In fact, we modified the weights for the canonical variate in the following way. Leader-Here/Now, the variable with highest univariate effect size, was given a weight of zero (it was very small to begin with). The weights for Leader-Relationship/Work

and Member-Personal were halved. For the remaining three variables, the ones discussed in the preceding paragraph, the weights were not changed. Therefore, this weighted sum, based on the modified canonical variate weights, had the influence of one variable removed, and the influence of two others cut in half. This led to a statistically significant weighted sum with ES = 2.40, or 87% of the ES for the canonical variate.

The last step was to rank the modified canonical variate weights. First, we standardized them using the square root of their respective mean square errors, and then normalized them so that the largest weight was set equal to one. The following ranking (and weights) resulted:

Member-Quadrant IV (1.00);
Member-Here/Now (.89);
Leader-Quadrant IV (-.70);
Leader-Relationship/Work (.15);
Member-Personal (.15)
Leader-Here/Now (.00)

As stated above, these weights, based on a modification of the optimal, canonical variate weights, result in a statistically significant combination. These weights heighten the contrast between the important contribution of Member-Quadrant IV, Member-Here/Now, and Leader-Quadrant IV, on the one hand, and the small contribution of the remaining variables, one the other.

DISCUSSION

Was the computer-based, prescriptive curriculum effective in teaching the content it was designed to teach? Based on the analysis of the Knowledge Test, the answer must be, "Yes." Did the knowledge gained from the prescriptive curriculum affect performance as assessed by the Hill Interaction Matrix? Again, the answer must be, "Yes." However, with respect to this last conclusion, a follow-up question is required. Did change occur in a direction consistent with the objectives of the prescriptive curriculum? At this point, there is no simple answer to this last question.

The multivariate null hypothesis for treatment was rejected because 1) members of groups led by those who got the prescriptive curriculum had a higher percentage of talk concerning the group and relationships among members, and 2) leaders from the control condition had relatively more talk in Quadrant IV, the most therapeutic part of the HIM. This latter result seems to be a very positive one for the control condition; however, there was no evidence that the group members followed this lead. What little difference there is in Member-Quadrant IV favors the prescriptive curriculum. On the other hand, there is evidence that the prescriptive group's members' talk in the here and now about the group and relationships is related to leader behavior, for the largest univariate effect was for the prescriptive leaders' higher percentage of talk about the here and now. Therefore, while the control condition leaders talked

in a more valuable category, the prescriptive condition leaders seemed to have had more impact on the members.

Clearly, the results concerning performance are not as clear cut as we had hoped they would be. We believe there are several reasons for this. First, the decision rules and actions comprising the prescriptive curriculum are both detailed and extensive. It was probably unrealistic to expect trainees to absorb and integrate the quantity of detailed information involved in only six hours spread across three weeks. Using Anderson's (1982) point of view about the acquisition of cognitive skill, the trainees were able to incorporate the prescriptions as declarative knowledge, but they were not able to compile it into performance knowledge, which is necessary to bring about the appropriate leader behaviors. More time and practice with the content seems warranted. As a second point, assessing the group interaction in the fifth week of the quarter, the week following the last lab session, was too early, especially if one wished to observe a group working in quadrant four of the HIM. Groups often do not develop that quickly. Therefore, we recommend that future efforts along this line allow both more time to learn the material and more time for the leaders to develop their groups.

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Table 1

Means and Standard Deviations of Scores on the Knowledge Test

		Training Condition	
Lab Day	Statistic	Control	Experimental
Monday	Mean	24.2	39.4
	S. D.	4.7	8.8
Wednesday	Mean	24.4	39.6
	S. D.	8.0	5.2

Note. N = 5 for each cell.

Table 2

Analysis of Variance for the Knowledge Test Scores

Source of Variation	Sum of Squares	Mean Square	DF	F	p Value
Interaction	.00	.00	1	.000	.999
Lab Day	.20	.20	1	.004	.949
Training Condition	1155.20	1155.20	1	24.243	.001
Error	762.40	47.65	16		
Total	1917.80	100.94	19		

Table 3

Means and Standard Deviations of Hill Interaction Matrix Ratings

Lab Day	Training Condition	Statistic	Interaction Matrix Variables					
			Leader - Here/Now	Leader - Relationship/Work	Leader - Quadrant IV	Member - Here/Now	Member - Personal	Member - Quadrant IV
Monday N = 10	Control N = 5	Mean	45.6	12.6	56.8	21.6	75.2	52.2
		S. D.	11.4	14.8	16.6	14.2	18.0	24.4
	Experimental N = 5	Mean	57.4	8.8	46.4	17.6	84.0	74.6
		S. D.	18.0	10.0	27.7	8.4	13.4	16.8
Wednesday N = 10	Control N = 5	Mean	26.4	9.2	68.0	10.2	52.4	60.2
		S. D.	14.8	11.2	14.3	8.4	26.6	22.1
	Experimental N = 5	Mean	51.6	24.4	43.0	35.6	68.8	46.4
		S. D.	33.2	33.2	31.0	31.7	23.3	40.9

Table 4

Within Cells Correlation Matrix for Hill Interaction Matrix Ratings

	Leader - Here/Now	Leader - Relationship/ Work	Leader - Quadrant IV	Member - Here/Now	Member - Personal
Leader - Relationship/ Work	-.409				
Leader - Quadrant IV	-.647	.616			
Member - Here/Now	.660	-.509	-.674		
Member - Personal	-.432	.454	.605	-.612	
Member - Quadrant IV	-.587	.480	.762	-.890	.629

Table 5

Univariate Analyses of Variance on Hill Interaction Matrix Ratings for Treatment Condition

Source of Variation	Hypothesis Mean Square	Error Mean Square	DF	F	p Value
Leader - Here/Now	1711.25	443.43	1,16	3.860	.067
Leader - Work	162.45	386.75	1,16	.420	.526
Leader - Quadrant IV	1566.45	551.50	1,16	2.840	.111
Member - Here/Now	572.45	336.53	1,16	1.701	.211
Member - Personal	793.80	438.93	1,16	1.809	.197
Member - Quadrant IV	92.45	757.00	1,16	.122	.732

Work Style	Content/Style Categories: Nonmember-Centered Topic	Nonmember-Centered Group	Member-Centered Personal	Member-Centered Relationship
Conventional	1	2	9	10
Assertive	3	4	11	12
Speculative	5	6	13	14
Confrontive	7	8	15	16

Figure 1. Hill Interaction Matrix (HIM) Cells.

APPENDIX

Three Examples of Decision Rules Used in the Prescriptive Curriculum

If the group is silent because the topic person is having trouble getting started, then:

1. Wait: Allow the silence to continue.

2. Diffuse: Any member's attempt to interfere or "rescue" the topic person.

3. Assign: In the future, if you think a member will have trouble getting started, then give them an assignment to prepare to talk about an issue (that they have already brought up) during the next group session.

If the group is silent while the topic person is struggling to become more specific about their concern or they are pausing due to an emotional reaction, then:

1. Wait: Allow some silence for the topic person to continue.

2. Reflect: Some basic feelings the topic person is having.

3. Ask: (If the topic person is still pausing.) Ask a member with a similar concern to help out the topic person.

If there is a productive display of emotion that appropriately breaks the group norm for intensity, then facilitate the expression and debrief the group:

1. Inform: The group about the interaction and process to the group; talk about what happened in a cognitive fashion.

2. Reinforce: Ask the topic person how they are feeling and reinforce their behavior.

3. Ask: Individuals how they felt:

   a. How they felt during the interchange/expression of affect.
   b. How they feel now.

4. Assist: The members in setting individual goals for themselves about how they need to learn about dealing with their anger, fear, pain, etc.

5. Comment: To whole group about the change in group norm.

6. Ask: The group about any residual reactions at the beginning of the next meeting.

Descriptions of Actions Referred to in Decision Rules

DIFFUSE:

Leader stops any group member's attempt to interfere or intervene in an interaction that the leader does not want to be interrupted.

Used when a topic person is struggling to define what they want to talk about or when two members are having a disagreement and a member is trying to interfere or choose sides.

Examples:

1) When member who is trying to figure out what they want to talk about is interrupted.

   "Harry, I think Jane will find your feedback more helpful after we give \her\ a chance to decide what \she\ wants to talk about.

2) Member tries to choose sides during an argument.

   "Sue, I think it would be best if we let Harry and Joe work this out between the two of them."

REINFORCE:

Use of praise and other "rewards" following a response in an effort to increase the likelihood that the client will repeat similar behaviors.

Used when an individual's norm for sharing is changed in a positive direction or when the group norm for interaction is changed in a desired direction.

Examples:

1) Non-verbal reinforcement

   A wink, nod, smile

2) Verbal reinforcement

   "John, I really think that it took a lot of courage to share what you did with the group, and I bet all of us will benefit by feeling more permission to talk about similar situations."